

Application No.: 10/064,830

Docket No.: JCLA9625

REMARKS**Present Status of the Application**

Upon entry of the amendments in this response, claims 1-13 are pending of which the claims 10-13 have been amended without prejudice or disclaimer in order to more explicitly describe the claimed invention. It is believed that no new matter is added by way of amendments made to the claims. For at least the foregoing reason, applicants respectfully submit that claims 1-13 patently define over prior art of record and reconsideration of this application is respectfully requested.

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Discussion for objection to claims under 35 U.S.C.112

1. *Claims 10, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention*
2. *Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out the subject matter which applicants regard as the invention.*

In response thereto, applicants made appropriate amendments to the claims 10, 11 and 12 so as to comply with the enablement requirement. The supporting reasons by which these claims were amended are described as follows.

From the last sentence in the preceding amended paragraph [0025], the subject matter claimed in claim 10, "said controller regulates said capacitor element to provide a power gap difference between a load demand and a power provided by said battery element, " is supposed to comply with the enablement requirement. Likewise, from lines 11-12 in the paragraph [0027], these discloses "Furthermore, so long as LI/B has not decayed below its cut-off voltage, the residual energy of LI/B may be converted by the PWM...." and in response thereto, the claim 11 is so amended to comply with the enablement requirement. Besides, from line 9 in the preceding amended paragraph [0026], there discloses "Within the forgoing voltage, S/C 112 can accept

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charging currents of any a magnitude up to hundreds of Ampere “ and in response thereto, the claim 12 is accordingly amended to comply with the enablement requirement. Finally, from the last two sentences in the preceding amended paragraph [0026], the claim 13 is accordingly amended to claim “while in a charging mode, said controller repeats a two-way charging sequence between said capacitor element and said battery element until they are fully charged” as its subject matter.

Discussion for objection to claims under 35 U.S.C.102 (b)

Claims 1-3, and 6 are rejected under 35 U.S.C.102 (b) as being anticipated by Thomas (US patent no. 5,587,250)

Thomas discloses a energy storage system which includes a first power source, which may be a zinc-air battery. (see col. 2, lines 23-27). The system further includes a second power source. The second power source may be a capacitor (see Fig. 3, col. 4, lines 37-65). Electronic circuit connected to the two power source is adapted to condition the output of the two power source.

In response thereto, applicants respectfully traverse the objections based on the following arguments and thus withdrawal of objections to the claims 1-3 and 6 is respectfully requested. To

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establish a prima facie case of anticipation, US patent no. 5,587,250 (Thomas, hereinafter referred to Thomas) should teach every element (or every step) disclosed in the independent claims 1 in the present invention. First of all, Thomas only discloses two power sources, one of which is a battery, and the other is rechargeable electrochemical capacitor. However, from Fig.2 in the present invention, Thomas fails to teach, suggest or disclose "two terminal on the exterior of said housing for charging and discharging" as claimed in the claim1 because the present invention allows the AC voltage to be rectified to a DC voltage, followed by charging the capacitor element with the DC voltage. Furthermore, from the last two sentences in the preceding amended paragraph [0026], the present invention permits the battery element and the capacitor element to be complementary charging/ discharging each other until they are fully charged. As a result, Thomas fails to teach, suggest or disclose "an electronic controller to control complementary charge and complementary discharge between said battery element and said capacitor element" as claimed in the claim1. Therefore, claim 1 is not anticipated by Thomas because of its filing to establish a prima facie case of anticipation.

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Discussion for objection to claims under 35 U.S.C.103 (a)

Claims 4-6 are rejected under 35 U.S.C.103 (a) as being unpatentable over Thomas in view of Lian (U.S. Patent No. 5,563,765)

Lian discloses capacitor having a charge density of 0.2 F/cm^2 (see col. 5, lines 37-45.) The capacitors were tested using a 31% KOH electrolyte. (see col. 4, lines 4-9)

In response thereto, applicants respectfully traverse the objections based on the following arguments and thus withdrawal of objections to the claims 4-6 is respectfully requested. First of all, the claim 4 claims an energy density of the capacitor element is 0.15 F/cm^2 , which is distinct from 0.2 F/cm^2 disclosed in Lian. Further, Lian fails to teach, suggest or disclose "electric double layer capacitor" as claimed in the claim 5. In addition, Lian fails to teach, suggest or disclose "the aqueous electrolyte including NaOH, H_2SO_4 , and H_3PO_4 " as claimed in the claim 6.

Furthermore, as the claims 4-6 are dependent claims, they are patentable as a matter of law for at least the reason that they contain all limitations of their base independent claim 1. That is, even if a combination Thomas and Lian could be made, this combination still fails to disclose all limitations of the claims 4-6. As a result, the claims 4-6 are patentable over Thomas in view of Lian.

Claims 7-8 are rejected under 35 U.S.C.103 (a) as being unpatentable over Thomas in

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view of Narang (U.S. Patent No. 5,548,055)

In response thereto, applicants respectfully traverse the objections based on the following arguments and thus withdrawal of objections to the claims 7-8 is respectfully requested. First of all, Lian discloses polymer electrolytes, instead of organic solvent claimed in the present invention. Especially, in third paragraph in page 5 in this OFFICE ACTION, there discloses "The plasticizer may be lower alkyl carbonates, which would include diethyl and dimethyl carbonate." As the examiner use an uncertain auxiliary verb, i.e. may, in the preceding allegation, it should be construed that the organic solvent diethyl and dimethyl actually are not disclosed in Narang. As mentioned in preceding section, the claims 7-8 are dependent claims so that they are patentable as a matter of law for at least the reason that they contain all limitations of their base independent claim 1. That is, even if a combination Thomas and Narang could be made, this combination still fails to disclose all limitations of the claims 7-8. As a result, the claims 7 and 8 are patentable over Thomas in view of Narang.

Claims 9-13 are ejected under 35 U.S.C.103 (a) as being unpatentable over Thomas.

In response thereto, applicants respectfully traverse the objection based on the following

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arguments and thus withdrawal of objections to the claim 9 and the amended claims 10-13 is respectfully requested.

Regarding the amended claim 10, as mentioned in the amended paragraph [0025] in the specification, the battery element is controlled to discharge at 1C or a lower rate. Therefore, if there exists a power difference between a power demanded by a load and that provided by the LI/B, it can be supplemented by recharging the capacitor element. The reference Thomas fails to teach, suggest or disclose the preceding technologies so that it can not render the amended claim 10 obvious.

Regarding the amended claim 11, from lines 11-12 in the paragraph [0027], as long as the voltage level of the capacitor is lower than that of the battery element, the capacitor will be automatically recharged by the battery. Then, the capacitor can be discharged to meet the power demand, and the capacitor returns to the low-voltage state. By repetitive recharging and discharging, the battery energy can be extracted by the capacitor until the cut-off voltage of battery is reached. Evidently, Thomas also fails to teach, suggest or disclose the preceding technologies so that it can not render the amended claim 11 obvious.

Regarding the amended claim 12, under the regulation of controller, the recharging current of the battery element will not cause overcharge to the capacitor element. After thoroughly

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studying Thomas, it is found that Thomas fails to teach, suggest or disclose that the controller regulates said capacitor element to receive a charging current of a magnitude up to hundreds of Ampere without exceeding an open cell voltage of said capacitor element, as recited in the amended claim 12. Consequently, the amended claim 12 is not obvious in view of Thomas.

Regarding the amended claim 13, Thomas fails to teach, suggest or disclose "controller repeats a two-way charging sequence between said capacitor element and said battery element until they are fully charged," as recited in the amended claim 13.

Furthermore, the present invention is independent of Thomas and Bean. In addition, Thomas and Bean disclose a housing holding an encapsulated battery and encapsulated capacitor, two completed devices. The present invention has an extra feature of integrating a battery element and a capacitor element when compared with Thomas and Bean. As a result, the resulted device of the present invention will be more homogeneous than the products of Thomas and Bean. Less material will be needed instead of three. Moreover, Thomas and Bean do not disclose how the electronic control is conducted

Furthermore, the claim 9 and the amended claims 10-13 are dependent claims so that they are patentable as a matter of law for at least the reason that they contain all limitations of their base independent claim 1. Therefore, the claim 9 and the amended claims 10-13 are patentable

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over Thomas because it fails to teach, suggest or disclose the limitations of "an electronic controller and the battery with one terminal for charging" contained in the claim 9 and the amended claims 10-13.

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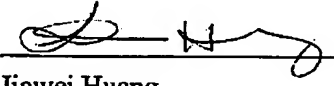
CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-13 of the present application patentably define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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